## Appendix I

# Air Movement Procedures for Target Acquisition Radars

Mission requirements may dictate that TA radars be moved by fixed wing or rotary wing aircraft. This is often the case when a radar must be operated from a forward operating base (FOB) and ground movement is not feasible, or the initial deployment was conducted without some or all of the radar sections prime movers or equipment transporters. Tactical movements will normally be conducted by C-130, UH-60 or CH-47D. The movement distance, airfield and aircraft availability will determine the method of movement.

## SECTION I – HELICOPTER MOVEMENT

### CONSIDERATIONS FOR HELICOPTER MOVEMENT

Adequate planning is essential for the air assault or air movement of a radar section or TA organization. The radar section or TA organization's immediate higher headquarters conducts planning for these operations. The higher headquarters may be the DIVARTY, DS battalion or other task force headquarters. Elements assigned to the higher headquarters will normally assist the TA organization or radar sections with loading, staging, landing zone (LZ) and pickup zone (PZ) operations. The planning for an air assault uses the reverse planning process and consists of the ground tactical plan, the landing plan, air movement plan, and loading and staging plan.

The ground tactical plan is the foundation for a successful air assault. All other plans support this plan. It specifies actions in the objective area required to accomplish the mission and set the stage for subsequent operations. Tactical employment requirements for radars are part of the ground tactical plan.

The landing plan enables accomplishment of the ground tactical plan. It sequences elements into the AO. Units must arrive at the designated locations and times prepared to execute the ground tactical plan.

The air movement plan supports the ground tactical plan and the landing plan. It specifies the schedule and provides instructions for air movement of troops, equipment, and supplies from the PZ to landing zone (LZ). It also addresses coordinating instructions regarding air routes; air control points; aircraft speeds, altitudes, and formations; and the planned use of attack and reconnaissance helicopters, including security and link-up operations. The air movement plan reflects the detailed coordination with the air mission commander (AMC) and the aviation LNO, who provide the technical and tactical assistance and recommendations.

The loading and staging plan depends on the air movement plan and ensures that troops, equipment and supplies are loaded on the correct aircraft. It prescribes arrival times of ground units and their equipment at the PZ in the proper order and location for movement. A good loading and staging plan incorporates unit integrity, cross loading, a bump plan and bump priorities.

The plan for conducting the air assault operation is provided to key participants during the air mission brief (AMB). All details of the operation are coordinated and synchronized prior to the AMB.

## LOADING

The radar section conducts pre-combat inspections (PCI) and rehearsals well before the staging phase to ensure leaders and soldiers are adequately prepared to execute the mission. The radar section will ensure loads are packed according to the load plan and will begin pre-rigging loads without losing operational capabilities. A checklist may be used to facilitate loading. Figure I-1 provides an example section level checklist.

## RADAR SECTION PRE-COMBAT INSPECTIONS

SECTION/TEAM: FIRE FINDER RADAR _____ Date: _____

SECTION CHIEF: _____

**A. EQUIPMENT MAINTENANCE**

Section Chief's Initials — Vehicles, Generators, Antenna Transceiver Group (ATG), Power Distribution Group (PDG), Sling Legs

_____1. Proper PMCS, current –14 (DA 2404) completed, -10 on hand for each item.
- _____a. No fuel leaks, cap serviceable and secure
- _____b. Fluid levels correct (engine, transmission, radiator), caps secure
- _____c. Battery levels correct, caps secure
- _____d. Air filters clean
- _____e. Lights operational
- _____f. No exhaust system leaks
- _____g. Interior clean and orderly
- _____h. All gauges operational
- _____i. Parking brakes functional
- _____j. Tire pressure correct to include ATG/PDG to 100 PSI
- _____k. Fire extinguisher present and serviceable

_____2. Vehicles dispatched and drivers license current
_____3. Load plans checked and verified by section chief
_____4. All OVM/BII 100% accounted for
_____5. First aid kit complete
_____6. Fuel tanks topped off at least ¾ tank
_____7. Insure winches are operational on ATG/PDG
_____9. Communications
- _____a. All commo equipment operational w/PMCS & -10 on hand
  ___ Radios; ___ OE-254; ___ TA-312; ___Remotes
- _____b. Required secure items (ANCD/Radar MAG tapes)
- _____c. Correct frequencies pre-set

_____10. Crew served weapons
- _____a. Cleaned and operational
- _____b. Before firing PMCS complete
- _____c. Accessory bags and cleaning material complete

**B. MISSION SPECIFIC ITEMS**

_____1. Advance Party Equipment
- _____a. PLGR
- _____b. Aiming Circle
- _____c. OE-254
- _____d. Chemlites (red and orange for marking LZ)
- _____e. VS-17 Panel (2 ea.)
- _____f. Strobe
- _____g. Combat Life Savers Bag

_____2. Main Body Equipment
- _____a. Class I - Take 72 hrs worth of MRE's
- _____b. 8 ea Water cans (minimum) full
- _____c. 20 ea Fuel cans full and stored in radar well
- _____d. Class IV – 16-20 rolls concertina, 20 long/10 short pickets
- _____e. Class V – Items drawn (individual/crew served, claymores, smoke, grenades, flares)
- _____f. Compass
- _____g. Radar and Generator tool kits
- _____h. 2 ea Slave Cables
- _____i. NBC Equipment drawn (M8, Radiac Meter, M8/M9 paper)

_____3. Air Assault Equipment
- _____a. 3 ea Sling Set, 25,000-lb. capacity
- _____b. 1 additional apex fitting (25,000-lb capacity) for rear hook up on Q-37.
- _____c. 1 ea Sling Set, 10,000-lb. capacity (recon vehicle)
- _____d. 5 ea sling set safety clamps
- _____e. 5 ea Reach Pendants
- _____f. 3 cut sheets of plywood to protect face of radar
- _____g. 5 ea Cargo straps 5K capacity
- _____h. 2 each airload tie down chains
- _____i. 2 roll Tape, adhesive, pressure sensitive, 2 inch wide
- _____j. 2 Spool Cord, nylon, type III, 550 BS
- _____k. 2 Spool Cotton webbing, ¼ in, 80-lb ES
- _____l. Cardboard or suitable padding material
- _____m. Chemlites (blue, green, red and orange for marking PZ)

_____**C. INDIVIDUAL EQUIPMENT**

_____**D. OPERATIONS BRIEF**

_____**E. REHEARSALS (SAND TABLE, CRAWL, WALK, RUN)**

**Figure I-1. Example Section Checklist**

## STAGING

During staging the radar section moves to the PZ at the designated time to rig the section's equipment. Loads are staged in accordance with the staging plan. Loads should be separated in line by 100 meters during daylight hours or 150 meters during limited visibility, and by 35 meters laterally. Whenever possible, personnel will stage near their loads and move from their loads to the aircraft for loading. Each chalk leader provides the aircraft crew chief with a load manifest.

## PICKUP ZONE OPERATIONS

The supported headquarters establishes PZ security, marks the PZ, provides a NCOIC and/or hook-up teams. Security sweeps are conducted, listening and observation posts established, and counter-reconnaissance initiated. These actions must occur early enough to ensure the security of the unit assuming PZ posture. Finally, the PZ is marked. Figure I-2 provides an example of a pickup zone for a Q-37 air assault mission.

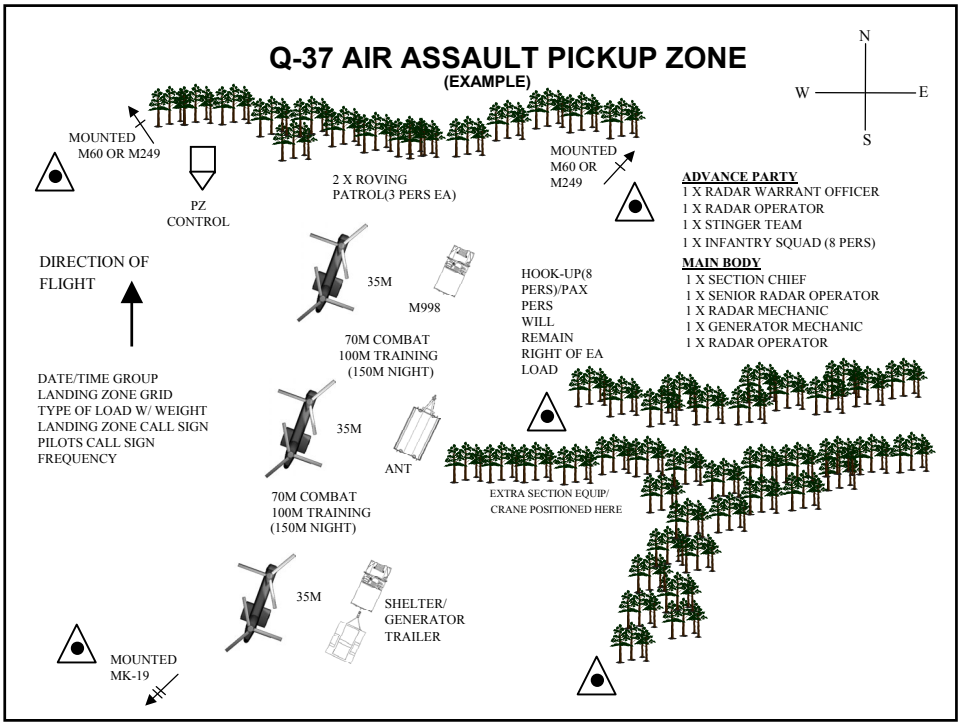



**Figure I-2. Example Pickup Zone**

## HOOKUP

Hookup teams require two persons per hook, one to hookup the load and one to stabilize the hookup person. A third person is required for a static probe if reach pendants aren't available. Teams face the aircraft during hookup and wear helmets, gloves and goggles (a set of NVGs should be available at night). Once the load is hooked, teams exit the load, move outside the rotar

disk area and monitor the load for problems. The team must be prepared to re-rig the load if required.

### LANDING ZONE OPERATIONS

The advance party secures the area and prepares for the arrival of the main body. During movement of Q-37 radars, the primary purpose of the advance party is to ensure the ATG is set down in the correct location. Emplacement procedures start as soon as the main body arrives. Figure I-3 shows an example landing zone for a Q-37 section.

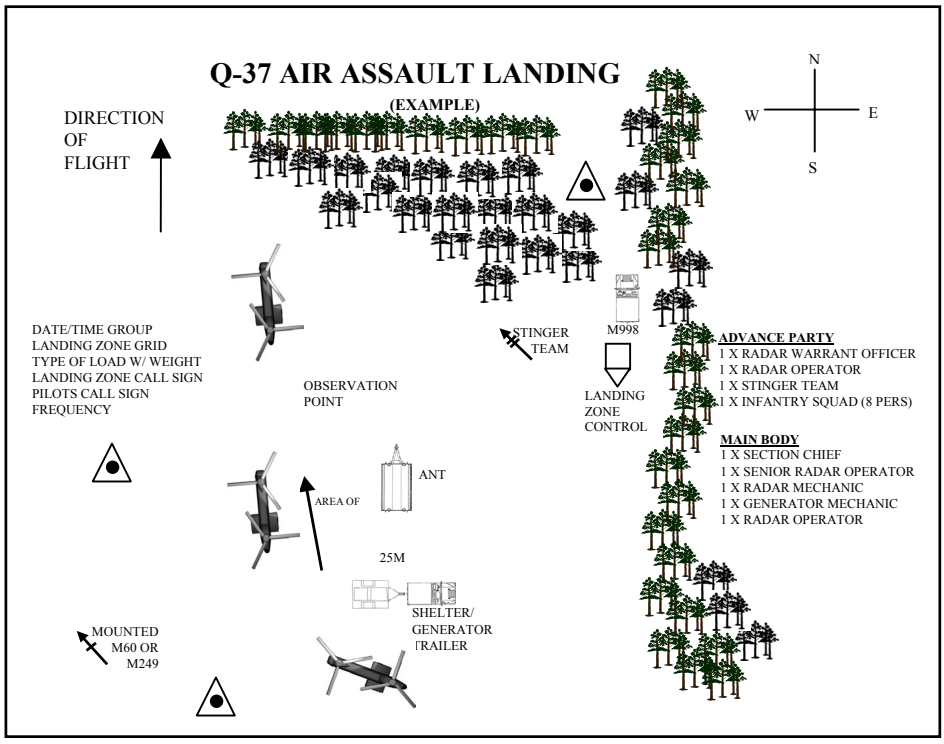



**Figure I-3. Example Landing Zone**

## Q-36 SLING LOAD PROCEDURES

The Q-36 radar section can be sling loaded and moved by CH47D and UH-60 helicopters. The Q-36 section requires a minimum of four UH-60 or two CH-47D aircraft to air lift an operational system. A combination of UH-60 and CH-47D aircraft may also be used to airlift the radar section. However, the Lightweight Multipurpose Shelter (LMS) must be removed from the M1097 HMMWV before sling loading by the UH-60 because the OC's weight exceeds the helicopter's external lift capacity. Further, an external lifting device capable of lifting at least 3300 pounds is required to remove the LMS in preparation for sling loading. Detailed procedures for removing the LMS from the HMMWV are contained in TM 11-5840-380-10. Single point sling procedures for use with the UH-60 are contained in FM 4-20.199 (10-450-4).

**NOTE:** The Q-36 radar's issued antenna cover is prone to tear and separate from the load and should be replaced with a sheet of plywood, 4 feet x 8 feet x ¾ inches. This is a critical step in preparing the Q-36 for sling load to protect the antenna face in the event the pilot does not offset the load prior to releasing the clevis. Severe damage may occur if the clevis lands on an unprotected antenna array.

The Q-36 radar section can be airlifted by CH47D without disassembly of radar components. Tandem dual point rigging procedures are used to transport the OC with ATG, PDG HMMWV with PU-799 and reconnaissance HMMWV with cargo trailer. Additional load combinations are possible. They are outlined in FM 4-20.196 (10-450-4) and FM 4-20-199 (10-450-5). Some rigging procedures require adjustments based on changes from Q-36(V)7 to the Q-36(V)8 and will require local certification until certified by the Combined Arms Support Command.

## OC RIGGING PROCEDURES

The OC can be moved by one CH-47D using a dual-point load. Two persons can prepare and rig this load in 15 minutes. The following materials are required to rig the OC for movement:

- Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
- Coupling link, part number 577-0615, from a 10,000-pound sling set (4 each).
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Felt sheet, cattle hair, Type IV, 1/2-inch or suit-able padding.
- Padding, cellulose.

Once the materials are secured the load is prepared for rigging. The load is prepared using the following steps:

- Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-, 25,000- or 40,000-pound capacity sling set with coupling links.
- Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
- Secure the shelter to the truck using wire rope or tie-down assemblies.
- Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
- Secure environmental control unit cover with duct tape.
- Disconnect the power cord from the rear panel and secure it to the rear platform with Type III nylon cord. Lower the power panel door and secure the door.
- Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.

- Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
- Engage the vehicle parking brake and put the transmission in neutral.
- Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- Tape the windshield in an X formation from corner to corner.
- Install the lift provisions on the outer ends of the rear bumper.
- Remove the upper antenna mounting bracket if installed.

Once preparations are completed the load can be rigged using the following steps:

- Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the shelter.
- Loop the chain end of the sling legs through their respective lift provisions that protrudes through the hood. Place link number 3 in the grab hook.
- Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the shelter.
- Loop the chain end of the sling legs through their respective lift provisions located on the outer ends of the rear bumper. Place link number 40 in the grab hook. Do not use the lifting shackles located near the center of the rear bumper for sling load lift provisions.
- Wrap the rear slings with padding where they contact the shelter sides.
- Secure all excess chain with tape or Type III nylon cord.
- Cluster and tie or tape (breakaway technique) the sling legs in each sling set on top of the vehicle to prevent entanglement during hookup and lift-off.

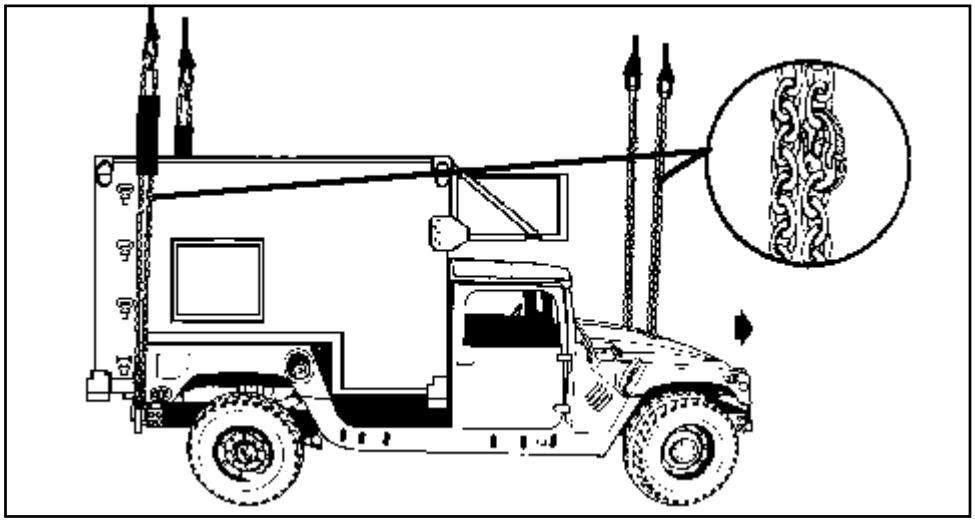


**Figure I-4. LMS Shelter Mounted on the M1097**

After the rigging is complete, the load is attached to the helicopter's cargo hooks. The hookup team stands on top of the shelter. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the vehicle and remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point. The procedures for derigging are the reverse of the preparation and rigging procedures.

## ATG RIGGING PROCEDURES

The ATG can be moved by a CH-47D using a single-point load. The same procedures are certified for the UH-60. Two persons can prepare and rig this load in 20 minutes. The following materials are required to rig the ATG for movement:

- Sling set (10,000-pound capacity).
- Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
- Coupling link, part number 577-0615, from a 10,000-pound sling set (4 each).
- Plywood, 4 feet x 8 feet x ¾ inches with edging.
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- Padding, Cellulose.

Once the materials are assembled the load is prepared for rigging using the following procedures:

- Connect one additional chain length to each chain of the sling set with the coupling link.
- Engage the trailer parking brake.
- Secure the doors closed with Type III nylon cord.
- Place the radar set in the travel mode and place the sheet of plywood on top of the antenna, firmly against the BSU. Route and secure a CGU-1/B across the width of the plywood at the center of the array. Hook a second CGU-1/B to the front right tiedown provision of the trailer. Route the tiedown diagonally over plywood and secure to the rachet to the left rear of the stowed ground rod, the lower tiedown provision, or the trailer frame. Repeat the procedure on the left side of the antenna routing the tiedown diagonally over the plywood.

After preparation the load is rigged for movement. The procedures are:

- Position apex fitting on top of the trailer (but not on top of the radar panel). Route outer sling legs 1 and 2 to the front of the trailer

(lunette end) and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

- Loop the chain end of sling leg 1 under the trailer A-frame just aft of the lunette and through the keeper from left to right on the left side of the drawbar. Place the link number 3 in the grab hook. Repeat with sling leg 2 on the right side of the drawbar.
- Route the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer. Place link number 25 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure the excess chain with Type III nylon cord.
- Cluster and tie or tape (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

After rigging, the load is attached to the helicopter. The hookup team stands on top of the ATG trailer frame. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then carefully dismounts the ATG and remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point. The hookup team must use care to avoid damaging the radar antenna. The following precautions are applicable:

- Do not stand on the radar panel during hookup.
- Due to limited clearance between the helicopter and the top of the ATG, the hookup team may want to use an extended sling system on this load and hook this load from the ground or the bed of a truck. Polyester round slings are recommended for use as vertical pendants. The extended sling legs may not be ideal for flying this load "nap of the earth" in a tactical environment.
- Hookup of this load presents substantial risk of damage to the load or injury to the hookup personnel. Use of a reach pendant is recommended for this load.

The procedures for derigging are the reverse of the preparation and rigging procedures. When releasing the apex fitting after setting the load down, the helicopter pilot should hover to the side to prevent damaging the radar panel.

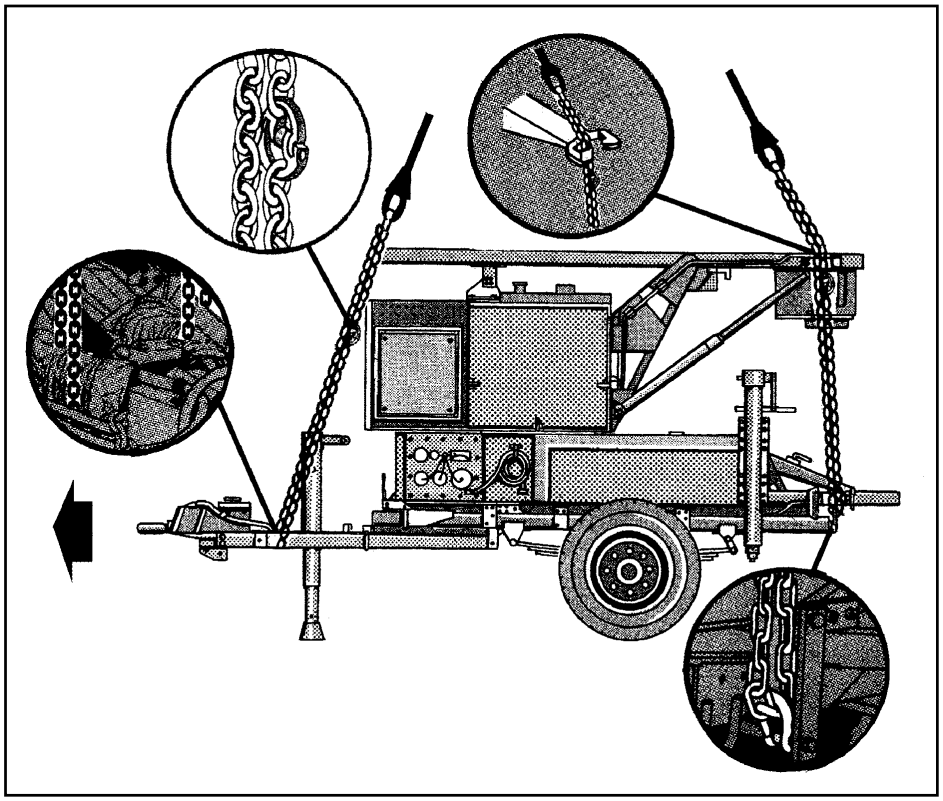


**Figure I-5. AN/TPQ-36 Antenna Transceiver Group**

## UTILITY HMMWV WITH TRAILER MOUNTED GENERATOR

The utility HMMWV and trailer-mounted generator can be moved by a CH-47D using a dual-point tandem load. Two persons can prepare and rig the HMMWV in 15 minutes and the generator set in 10 minutes. The following materials are required to rig this load:

- Sling set (10,000-pound capacity) (2 each).
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Strap, cargo, tie-down, CGU-1/B (2 each, or more as required to secure cargo).
- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

Once the materials are assembled the load is prepared for rigging. Attach the generator set to the truck by placing the lunette on the pintle hook and securing the latch. Secure the safety chains, cables, and hoses. Position the vehicle on level ground so both the truck and generator set are in a straight line. The load is prepared using the following procedures:

- Fold mirrors forward in front of the windshield and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.
- Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.
- Ensure the fuel tanks are not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.
- Engage the vehicle parking brake and put the transmission in neutral.
- Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- Retract the lunette leg and secure with Type III nylon cord.
- Secure all lids, doors, and caps with tape or Type III nylon cord.
- Ensure the trailer parking brakes are set.
- Route the hook portion of a CGU-1/B tiedown strap through the left rear inboard tiedown provision located near the pintle on the rear bumper of the truck and through the mounting bracket on the front of the trailer A-frame. Connect the hook to the ratchet of the CGU-1/B.
- Repeat the above procedure on the right side of the load.
- Tighten both CGU-1/B tiedown straps at the same time. Secure the excess strap and safety the ratchet handles in the closed position with tape.

One the load is prepared it can be rigged using the following steps:

- Position the apex fitting of sling set 1 in the bed of the vehicle. Route outer sling legs 1and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
- Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood. Place link number 79 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
- Route the chain end of sling leg 3 through the sling guide in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the sling guide in the tailgate. Place link number 3 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
- Cluster and tie or tape (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.
- Position apex fitting of sling set 2 on the trailer but not on top of the generator. Route outer sling legs 1and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

- Loop the chain end of sling leg 1 through the left front lift provision located near the A-frame on the front of the trailer. Place link number 52 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.
- Route the chain end of sling leg 3 through the left rear lift provision. Place link number 36 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord.
- Pad the chains where they contact the load.
- Cluster and tie or tape (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

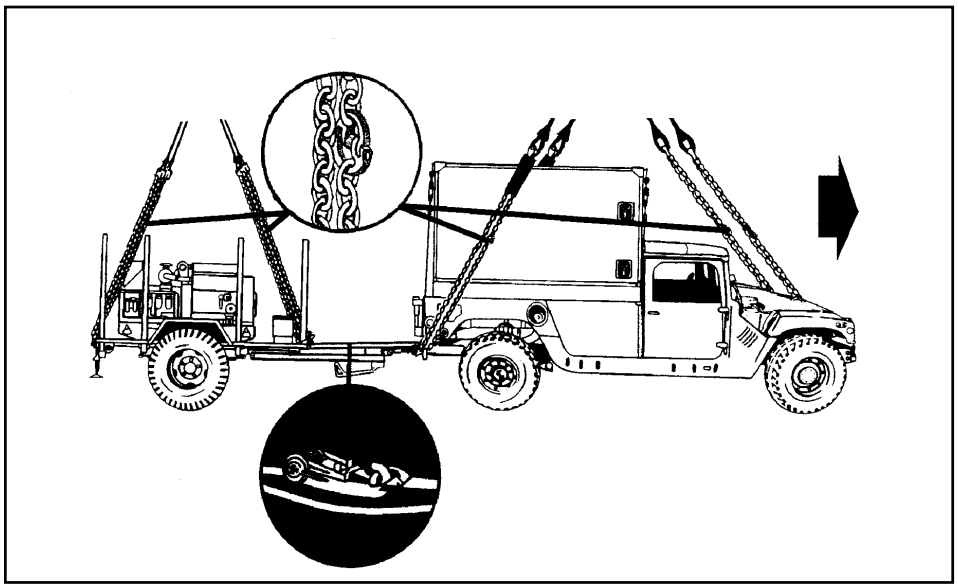


**Figure I-6. M998/M1038 HMMWV and Trailer Mounted Generator**

Once rigging is complete, the load can be hooked up to the helicopter. Two hookup teams are required for this load. The static wand person discharges the static electricity with the static wand. The forward hookup person stands in the bed of the truck and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the generator fender and places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the trailer and remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point. The procedures for derigging are the reverse of the preparation and rigging procedures.

## M1097 AND ETG RIGGING PROCEDURES

The procedures for this equipment are the same as for the HMMWV with trailer mounted generator.

## Q-37 SLING LOAD PROCEDURES

The AN/TPQ-37(V)8 is certified for CH-47D helicopter sling load in the dual point configuration. The antenna must be removed from the ATG trailer before sling loading. A 40-ton crane is required to remove the antenna from the antenna trailer and reconfigure the system after movement. Therefore, the ATG becomes stationary after movement. If the trailer is to accompany the antenna, it must be rigged as a separate load. The threat must be carefully evaluated before deciding to move the radar by helicopter since the radar is unable to displace without external support. Helicopter movement of the radar is used in exceptional circumstances and is used only when mission requirements make this type of movement an absolute necessity. The following procedures provide data for moving the minimum essential equipment using non-standard rigging procedures. These procedures require local certification. The minimum essential equipment can be moved with two CH-47Ds. However, it is preferable to use three CH-47Ds with separate lifts for the OC and PU-806. In addition, a UH-60 or CH-47D is required to move the advance party. The primary section personnel travel on the CH-47Ds with the radar components. The remaining section equipment with drivers will normally move forward by ground with the 40-ton crane. Procedures for rigging the remaining section equipment are found in FM 4-20.199 (10-450-5).

### ATG RIGGING PROCEDURES

The ATG antenna can be moved by one CH-47D using a dual-point load configuration. Two persons can prepare and rig this load in 15 minutes once the antenna is removed from the M1048 transporter. The following materials are required to rig the antenna for movement.

- Sling Set, 25,000-lb. capacity with one additional apex fitting (25,000-lb capacity).
- Reach Pendant Assembly, NSN 4020-01-337-3185 (2 each).
- Tape, adhesive, pressure sensitive, 2-inch wide roll.
- Cord, nylon, type III, 550-pound breaking strength (1 spool).
- Webbing, cotton, 1/4-inch, 80-pound breaking strength (1 spool).
- Plywood, sheet, 3/4-inch thickness (3 each).
- Cargo straps, 5,000-pound capacity, CGU-1/B (5 each).

Once the materials are assembled the load is prepared for rigging using the following procedures:

- Configure the Antenna unit for march order. If the antenna unit is mounted on its transport trailer, a 40-ton crane must be used to remove it for helicopter transport. If the trailer is to accompany the unit, it must be rigged and transported as a separate load. Detailed procedures for removing the antenna from the transport trailer are contained in TM 11-5480-355-10.
- Ensure that the maintenance tent frame and cover are stowed and secured in their proper position.

- Ensure that all cover panels, cabinet doors and vents are installed and secure.
- Secure all loose equipment with tape or nylon cord.
- Ensure that the rear door is closed and secured with its locking handle. Door rods must be secured in their cups.
- Ensure that the antenna transport cover is secured tightly to the lacing brackets with its bungee cord. If necessary, secure the antenna with additional nylon cord.

Once preparations are complete the load is rigged using the following procedures

- Cover top of radar with 3/4-inch plywood and secure with 5K straps. Figure I-7 shows the preparation and placement of plywood on the antenna. Do not stand on top of the load until the plywood is in place.
- Rotate both antenna tie-down ratchet handles toward the center to prevent sling interference.
- Turn pear-shaped lift rings to rotate the apex of each ring upwards, in the direction of lift.

**NOTE:** This load is rigged to fly so that lift provisions on TOP are forward.

- Forward sling set (2 sling legs):
  - Connect two sling legs to apex fitting number 1 (for front cargo hook). Position apex fitting on top of the load and secure one reach pendant to the apex fitting.
  - Forward lift rings are on top of antenna. Loop the chain end of sling leg 1 through front left lift ring and insert link 55 in the grab-hook. Repeat with sling leg 2, passing chain end through front right lift ring and inserting link 55.
  - Remove slack from front sling legs, and tie securely with breakaway tape on the top corner of the sling guides to prevent tangling.
- Aft sling set (2 sling legs):
  - Connect two sling legs to the apex fitting number 2 (for rear cargo hook). Position apex fitting on top of the load.
  - Rear lift rings are at the aft end of antenna. Loop the chain end of sling leg 3 through the left rear lift ring and pass through the sling guide. Insert link 10 into the grab-hook. Repeat with sling leg 4.
  - Remove slack from rear sling legs, and tie securely with breakaway tape on the top corner of the sling guides to prevent tangling.
- Wrap excess chains and secure with tape or nylon cord.
- Secure padding to the slings in the areas where the chain may rub antenna.
- Cluster and tie, with cotton webbing (breakaway technique), the slings of each sling set together on top of the antenna to prevent entanglement during hookup and lift-off.

Once rigging is complete, the load is hooked up to the helicopter. The hookup team remains close to the load as the helicopter removes slack from the sling legs. When the helicopter is overhead, the forward hookup person places reach pendant 1 onto the forward cargo hook, and the aft hookup person places reach pendant 2 onto the aft cargo hook. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter and move to the designated rendezvous point. De-rigging is the reverse of the preparation and rigging procedures in steps 1 and 2. Caution the pilot to hover to one side before releasing the sling load to prevent damage to the radar unit.

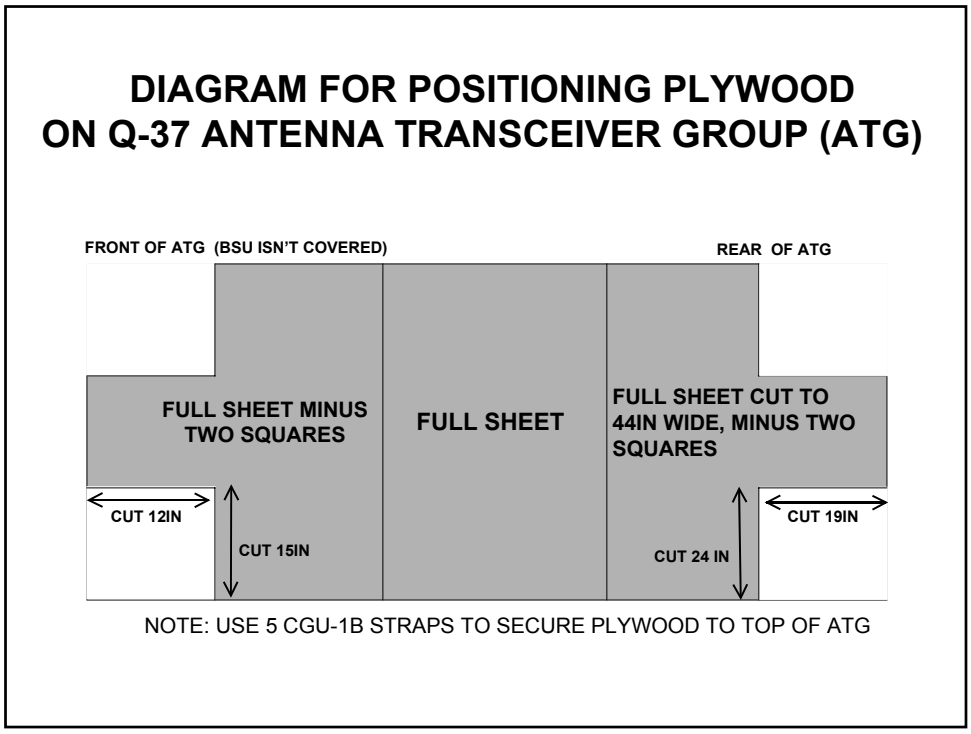



**Figure I-7. ATG Plywood Preparation**

## RIGGING PROCEDURES FOR THE OC AND TRAILER POWER DISTRIBUTION GROUP

The OC and the trailer power distribution group (TPDU) can be moved by one CH-47D using a dual-point load configuration. Two persons can prepare and rig the OC or AGU in 15 minutes. This load can be completely rigged by four persons in 15 minutes. The following materials are required to rig the antenna for movement:

- Sling sets, 25,000-pound capacity (2 each).
- Sling set safety clamps (2 each).
- Reach Pendant Assembly, NSN 4020-01-337-3185 (2 each).
- Tie-down chains (load binders), air cargo, (2 each).
- Cord, nylon, Type III, 550 pound breaking strength (1 spool).

- Tape, adhesive, pressure sensitive, 2 inch wide roll.
- Webbing, cotton, 1/4 inch, 80 pound breaking strength (1 spool).
- Cellulose or felt padding.

**NOTE:** The tongue weight of the trailer exceeds the pintle weight of the M1097 and will require local certification. Use separate loads rigged IAW FM 10-450-5 when three aircraft are available.

The following actions are required to prepare the load for rigging:

- Attach the trailer to the truck.
  - Place the trailer lunette in the truck pintle hook ensuring the trailer brakes are disengaged. Lock and tape the pintle and connect the trailer safety chains to the truck.
  - Raise landing leg and lock in stowed position. Secure the landing leg with pins and tape.
  - Install truck lift provisions on the outer ends of the rear bumper. Remove tiedown provisions from the front bumper and install on the inner lift points of the rear bumper.
  - Secure the trailer to the truck to prevent it from pivoting in flight by routing one end of the cargo chain through the left (driver side) truck inner lift provision located on the rear bumper. Route the other end of the cargo chain strap through the A frame to trailer mounting bracket.
  - Repeat with another cargo chain strap on the right side of the truck and trailer.
  - Tighten both cargo chain straps simultaneously to ensure straight alignment during flight. Secure the ratchet handles in the closed position using tape or nylon cord.
- M1097 HMMWV.
  - Remove antennas and fold down the mounting brackets to their stowed positions. Secure all loose equipment inside the shelter with tape, nylon cord, and/or tiedowns. Close and secure door.
  - Ensure the fuel tank is no more than 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
  - Fold the truck mirrors rearward into cab area and tie them together with nylon cord. Remove the doors and secure them inside the truck.
  - Secure all loose equipment, cargo and antennas inside the truck with nylon cord, tape and/or tiedowns.
  - Engage the truck parking brake. Place the transmission in neutral.
  - Ensure the truck's front wheels are positioned straight and forward. Secure the steering wheel using either the securing devise under the dash or nylon cord.
- PU-806.
  - Engage parking brake
  - Secure door latches shut with tape

After preparations are complete, the load is rigged in the following manner:

- M1097 HMMWV.
  - Attach one of the pendants to the apex fitting of one of the sling sets. Position the sling set (sling set 1) on top of the shelter. Route outer sling legs 1 and 2 to the front of the truck and inner sling legs 3 and 4 to the rear of the truck. Sling legs 1 and 3 must be on the left side of the truck.
  - Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood and insert link 35 in the grabhook. Repeat with sling leg 2 and the right front lift provision.
  - The rear lift provisions are located at the outer ends of the rear bumper. Do not loop the chain ends through the tie-down shackles located near the center of the bumper. Loop the chain end of sling leg 3 through the left provision and insert link 10 in the grabhook. Repeat with sling leg 4 and the right rear lifting shackle.
  - Secure excess chain with tape or nylon cord.
  - Raise the pendant and apex fitting above the truck. Secure the rear sling legs to the rear lift rings of the shelter with 80 pound breakaway webbing. Ensure that the front legs are to the sides of the truck.
  - Take up slack in all truck sling legs, cluster and tie (breakaway technique) together on top of the truck, to prevent entanglement during hookup and lift-off.
- PU-806.
  - Attach the remaining pendant to the apex fitting of sling set 2. Position sling set 2 on top of the trailer. Route outer sling legs 1 and 2 to the front of the trailer and inner slings 3 and 4 to the rear of the trailer. Sling legs 1 and 3 are routed to the left side of the trailer.
  - Route the chain end of sling leg 1 through the lift point near the A frame at the front left of the trailer. Insert link 68 into the grab hook. Pull sling tight and pad area of sling that will make contact with the antenna and plywood. Tie a breakaway through a whole drilled through the plywood. Repeat with sling leg 2 at the right front of the trailer.
  - Loop the chain end of sling leg 3 through the left rear lift provision, insert link 80 into the grab hook. Place the sling leg through the sling guide on the antenna and pull up until tight. Remove the sling leg from the guide, pad it where it makes contact with the antenna. Replace it in the guide, pull up tight and tie a breakaway to prevent it from slipping down. Repeat with sling leg 4 at the right rear lift provision.
  - Secure excess chain with tape or nylon cord.
  - Take up slack, cluster trailer sling legs together, and tie a breakaway to prevent entanglement during hookup and lift off.

Two hookup teams are required for this load. One hookup team stands on the cab of the truck and the other stands on a fender of the trailer. The truck hookup team places the reach pendant of sling set 1 into the forward cargo hook. The trailer hookup team places the reach pendant of sling set 2 onto the rear cargo hook. Do not use the center cargo hook. The hookup teams then carefully dismount the truck and trailer and remain close to the load as the helicopter removes the slack from the sling legs. Ensure the apex remains in the proper position on the loop of the reach pendants. If the tiedown straps connecting the truck and trailer loosen upon liftoff, the load should be set down and the ratchets tightened. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point. De-rigging is the reverse of the preparation and rigging procedures in steps 1 and 2.

## SECTION II – FIXED WING AIRCRAFT MOVEMENT

## CONSIDERATIONS FOR FIXED WING AIRCRAFT MOVEMENT

Air transport is used to move vehicles, personnel and equipment when time is a critical factor. When transit time is not critical, other modes of transport should be used. The type of aircraft will vary based on the operational requirements, aircraft availability, movement distance, airfield availability, threat, amount of equipment to be moved, equipment preparation time, and external support requirements. Radar sections will normally be transported by C-5A, C-17, C141, or C-130. The C-5A and C-141 are designed for strategic intertheater transport. The C-17 can function as a strategic intertheater or a tactical intratheater transporter. The C-130 is tactical intratheater aircraft. The C-130 will normally be the aircraft of choice for tactical movements. The basic procedures are the same for both strategic and tactical air movement.

There are specific requirements for preparing radar section equipment for loading on specific aircraft. The AN/TPQ-36(V)8 can be loaded on all of the aforementioned aircraft without disassembly of components. The only special requirement is that the OC Shelter/HMMWV must be driven cab first into C-130 and C-141 aircraft. The AN/TPQ-37(V)8 can be transported in roll-on/roll-off configuration on C-5A and C-17 aircraft. For transport on C-130 and C-141 aircraft, the generator group must be removed from the generator truck and the ATG must be removed from the transporter to fit into the aircrafts' cargo holds. A crane and K-loader (or additional empty M925 5-ton truck with winch) are required to remove the ATG and generator group from their transporters and load them onto the aircraft. The same equipment is required for off-loading and reassembly of components.

### AIR LOADING OPERATIONS

Planning for air load operations begins with receipt of the mission at the TA organization or radar section's higher headquarters. Just as in sling load operations, air loading is planned using the reverse planning process. The plan for air loading must address preparation and coordination, air movement, re-configuration of equipment, and execution of the ground tactical operation. Once the mission analysis is completed a warning order is

issued to the deploying elements. The warning order should contain the following information:

- Type of mission.
- Number and type of aircraft.
- Time and location of Joint Inspection (JI).
- Departure airfield and time.
- Arrival airfield and time.
- Area of Interest.
- Special Instructions.
- Attachments/ Detachments.

Upon receipt of the warning order the radar section will conduct PCIs for air load operations, section rehearsals and begin preparing loads without losing operational capability. PCIs specific to air loading include:

- Winches are operational and complete, including slave cables, control unit, all hooks and chains.
- 25K sling sets are available to lift equipment at the JI scales.
- Required bridge plates and shoring are on-hand.
- T-handle lead bars are present and serviceable.

Once preparations are complete the radar section moves to the departure airfield. Unit equipment is initially placed in a marshaling area. In the marshaling area, personnel and cargo manifests are prepared, equipment and vehicles are assembled into chalks or loads, and moved to the alert holding area. At the alert holding area, the departure airfield control group (DACG) accepts the Army's equipment and supplies. They inspect them and ensure all passengers are accounted for and available. From the alert holding area, the load is directed to the call forward area where a joint inspection is carried out by the aerial port element of the Air Force tanker airlift control element (TALCE) and the DACG. Final briefings are given, manifests reviewed for accuracy, and personnel and baggage escorted to the aircraft for loading. The aerial port element of TALCE then receives the cargo at the airfield loading ramp/ready line and, in conjunction with the loadmaster, loads and secures it aboard the aircraft.

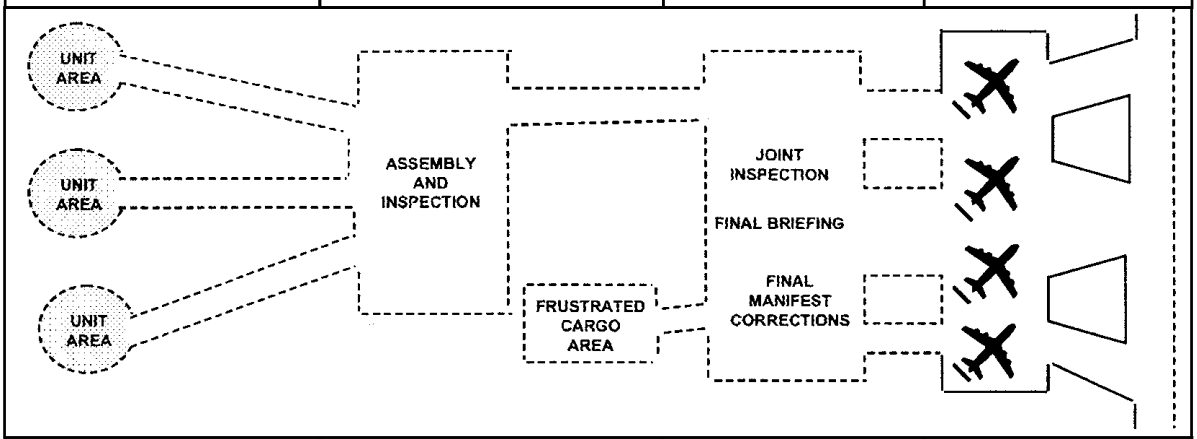
A variety of techniques can be used to load aircraft. Aircraft are usually loaded according to the unit's load plans. However, the aircraft loadmaster is the final authority on how cargo is to be loaded and positioned aboard an aircraft. The DACG normally does the loading under the supervision of the loadmaster.

## DEPARTURE AIRFIELD OPERATIONS

The air terminal commander or civilian operator is responsible for air terminal operations at the departure airfield. The Army or other service component commander will provide a DACG to control Army activities at the terminal. The DACG may also be responsible for loading and unloading aircraft and cargo at these facilities. Deploying units coordinate with the DACG for their responsibilities in processing through the terminal. The

TALCE supervises Air Force operations at the air terminal. The DACG and the TALCE must coordinate support responsibilities prior to the start of operations. Departure airfield operations consist of four separate areas of activity for the unit, DACG, and TALCE. These areas are the marshaling area, the alert holding area, the call forward area, and the loading ramp area. The TALCE coordinates the overall airlift operations at the departure airfield.

| MARSHALING AREA | ALERT HOLDING AREA | CALL FORWARD AREA | READY LINE/LOADING RAMP AREA |
|---|---|---|---|
| Deploying unit area of responsibility. Unit prepares for air movement: assembles vehicles/equipment, supplies, and personnel into chalks (roads); and delivers to alert holding area where operational control of each chalk diverts to the DACG for air movement operation. | Departure airfield control group area of responsibility. The main function of the DACG is to ensure that the movement of equipment and supplies the from alert holding area to the call forward area is accomplished in an orderly fashion. The reception of aircraft loads and performance of a pre-inspection are the major functions accomplished. | Dual DACG and TALCE area of responsibility. Joint inspection and discrepancy corrections are the main functions within this area. Loads are moved from call forward area and released to the TALCE at the ready line. | TALCE area of responsibility. Receives control (air movement operations) from DACG and conducts additional briefing/inspections as required. Responsible for all air movement operations from loading to airlift. |




| MAJOR FUNCTION | MAJOR FUNCTION | MAJOR FUNCTION | MAJOR FUNCTION |
|---|---|---|---|
| *Prepares personnel and cargo manifests.<br>*Prepares other documents agreed upon during the joint planning conference.<br>*Conducts initial inspection of each chalk.<br>*Releases each chalk to the DACG at the alert holding area. | *Accepts chalk from deploying unit. PRE-J1.<br>*Conducts inspection.<br>*Establish traffic flow pattern.<br>*Establish communications with deploying units, functional areas and TALCE.<br>*Coordinates logistical support as needed. | *Conduct joint inspection<br>*Conducts final briefing and performs final manifest corrections.<br>*Compiles Statistical data.<br>*Provides area for correction of discrepancies identified during joint inspection.<br>*Relays discrepancy. information to AHA and | *Establish aircraft parking plan.<br>*Receives load at ready line, directs to aircraft.<br>*In conjunction with aircraft loadmaster or load team chief, supervises the supported service while loading and restraining cargo aboard aircraft. |

**Figure I-10. Departure Airfield Operations**

### Marshaling Area Activities

The marshaling area is provided by the installation or base commander of the geographic area of responsibility (AOR) from which the deploying unit stages its departure. Marshaling area activities are the responsibility of the deploying commander. These activities may take place within the deploying unit's permanent area or in another area to ease movement and control. In either case, the marshaling area activities should take place as close as possible to the departure airfield. Its location should not cause unnecessary congestion to airfield operations or undue hardship to the deploying unit. It may be the area where units may start, continue, or complete preparation for loading.

The installation/base commander (or the parent organization) who provides the marshaling area will assist the deploying forces. The deploying unit should not be required to perform support functions thus permitting concentration on preparation for the deployment.

The home station installation or parent organization is responsible for the movement of its subordinate units. The deploying unit should do the following:

- Establish liaison with the DACG and other activities.
- Coordinate a joint planning conference.
- Perform final preparation of vehicles and equipment according to air transport guidelines (to include weighing and marking center of balance).
- Ensure that adequate shoring material is on hand and readily available.
- Prepare personnel and cargo manifests.
- Assemble personnel, supplies, and equipment into aircraft loads according to established load plans.
- Ensure planeload or troop commanders are appointed and properly briefed on their responsibilities.
- Develop alternate (bump) plan for chalks in the event aircraft becomes non-mission capable.
- Pass control of unit aircraft loads to the DACG at the alert holding area.

The DACG is responsible for the following:

- Maintaining liaison with the deploying unit.
- Arranging with the TALCE for Air Force technical assistance required by the deploying unit.
- Establishing communications.
- Maintaining liaison with the aerial port section of the TALCE.
- Calling aircraft loads forward from the marshaling area and assuming control in the alert holding area.

### Alert Holding Area

The alert holding area is the equipment, vehicle, and passenger control area. It is normally located in the vicinity of the departure airfield. It is used to assemble, inspect, hold, and service aircraft loads. Control of the load is transferred from the individual unit to the DACG at this point. The deploying unit is responsible for the following:

- Ensuring that the aircraft load arrives at the alert holding area at the time specified by the DACG.
- Providing the DACG with passenger and/or cargo manifests and required documentation.
- Correcting load discrepancies identified during pre-inspection.
- Ensuring vehicle drivers remain with the vehicles until released.

The DACG is responsible for the following:

- Ensuring loads arrive at the alert holding area at the time agreed upon by the deploying unit and TALCE.
- Receiving, inventorying, and controlling aircraft loads as they arrive at the alert holding area.
- Inspecting aircraft loads to ensure that they are complete and correctly prepared. Ensure required shoring, floor protection materials, and 463L dunnage are available.
- Verifying accuracy of weight and balance markings.
- Establishing a discrepancy correction area.
- Inspecting documentation for accuracy and completeness.
- Providing emergency maintenance, POL, and related services, as needed, to accomplish the out-loading mission.
- Directing or guiding aircraft loads to the joint inspection area (call forward area).

The TALCE will assist the DACG as required.

### Call Forward Area

The call forward area is that portion of the departure airfield where the joint inspection is conducted. A final briefing is provided to deploying troops and all manifests reviewed for accuracy. The deploying unit will correct all discrepancies found by the DACG/TALCE joint inspection. The DACG is responsible for the following:

- Establishing communications with TALCE and deploying units.
- Assisting in the joint inspection of aircraft loads and manifests.
- Ensuring that passenger/cargo manifests are correct.
- After loads have passed inspection, moving equipment forward to the ready line segregated by load.
- In the event of aircraft aborts or discrepancies in the planned allowable cabin load (ACL), reassembling aircraft loads with the assistance of the TALCE and preparing required manifest changes.

- Ensuring that discrepancies found during the joint inspection are corrected.
- Maintaining statistical data to account for the current status of all unit personnel and equipment scheduled for air movement.
- Ensuring the deploying unit adheres to the established movement timetable.
- Providing loading team personnel and support equipment to include one pusher vehicle per load team.
- Providing gloves, goggles, ear protection, and reflective devices for load team members.
- Escorting aircraft loads to the ready line and ensuring that all personnel are briefed. (Personnel will be briefed on flight line safety, including driving procedures, smoking rules, and other applicable local safety requirements.)
- Retaining a final corrected copy of each passenger/cargo manifest and inspection record.
- Ensuring that deficiencies noted during the joint inspection are relayed to the alert holding area and the unit. This action will prevent recurrence of the same deficiencies. The DACG provides emergency services as required and agreed upon at the joint planning conference to ensure uninterrupted operations.
- Providing fueling and de-fueling capability and emergency maintenance for vehicles to be transported.
- Providing passenger holding areas as required.

The TALCE is responsible for the following:

- Coordinating with the DACG on all changes required to the aircraft configuration.
- Together with the DACG, conducting the joint inspection using DD Form 2133.
- Providing passenger briefing guide for the passengers' representative to brief the troops for on/off load procedures.
- Briefing vehicle drivers and passengers on flight line safety, driving procedures, smoking rules, and special precautions.
- Providing a team chief for each loading team.
- Providing passenger escort to the aircraft.
- Notifying the DACG when loads are to be dispatched to the loading ramp area ready line.
- Accepting loads at the ready line and load aboard the aircraft. (If a TALCE is not available, the aircraft loadmaster will accept the load.)
- Providing airflow information to the D/AACG.

DD Form 2133, Joint Airlift Inspection Record is used for conducting the joint inspection. A copy of this form is at Appendix K.

### Loading Ramp Area

The loading ramp area, including ready line area, is controlled by the TALCE. The planeload commander or troop commander is responsible for the following:

- Following directions of load team chief or passenger escort.
- Monitoring and controlling aircraft passengers.
- Retaining one copy of the final passenger/cargo manifest.
- Providing assistance in loading and securing the aircraft load as requested by the load team chief.
- Ensuring that vehicle drivers and equipment operators follow the instructions of the load team chief or primary loadmaster while loading equipment on the aircraft.

The DACG is responsible for the following:

- Transferring control of the aircraft load to the TALCE at the ready line and monitoring the loading.
- Providing load teams to assist in loading and securing aircraft load as required by the load team chief.
- Maintaining coordination with the deploying unit representative and TALCE.
- Obtaining individual aircraft load completion time from the TALCE.

The TALCE is responsible for the following:

- Accepting planeloads from the DACG at the ready line.
- Ensuring that all drivers have been briefed on flight line safety.
- Ensuring that each aircraft load is positioned at the proper aircraft at the specified time.
- Maintaining liaison with the aircraft crew and the DACG.
- Coordinating with the aircraft primary loadmaster and ensuring that loads are placed aboard the aircraft in time to meet the scheduled departure time.
- Providing (if required) and operating MHE and special loading equipment according to AR 59-105/AFR 76-7/OPNAVINSTR 4630.13D/MCO 4660.2 and agreements established during the joint planning conference.
- Maintaining communications with the DACG and deploying units.
- Providing aircraft primary loadmaster with required copies of the passenger/cargo manifests and retaining a copy for TALCE files.
- Briefing aircrews, as required.

The load team chief is responsible for the following:

- Receiving loads at the ready line.
- Directing and supervising the loading teams and vehicle drivers.
- Coordinating with the aircraft primary loadmaster, directing all loading operations, and ensuring all equipment and supplies are properly restrained in the aircraft.

- Coordinating with the TALCE ready line coordinator for any special assistance or equipment needed.
- Collecting required copies of the passenger/cargo manifest and making sure that they are given to the aircraft primary loadmaster.
- Passing load completion time to the airlift operations center (AOC) section of the TALCE.

## ARRIVAL AIRFIELD OPERATIONS

Activities at the arrival airfield (aerial port of debarkation (APOD)) are similar to those of the departure airfield. Loads are off-loaded, equipment is reconfigured, and the unit moves from the airfield to its area of operations. The main areas of the arrival airfield are the off-load ramp, the holding area, and the unit marshaling area. The TALCE will supervise off-loading arriving aircraft. The arrival airfield control group (AACG) will escort loads to the holding area and assist the unit in assembling and moving to the marshaling area. Figure I-11 depicts a notional APOD.

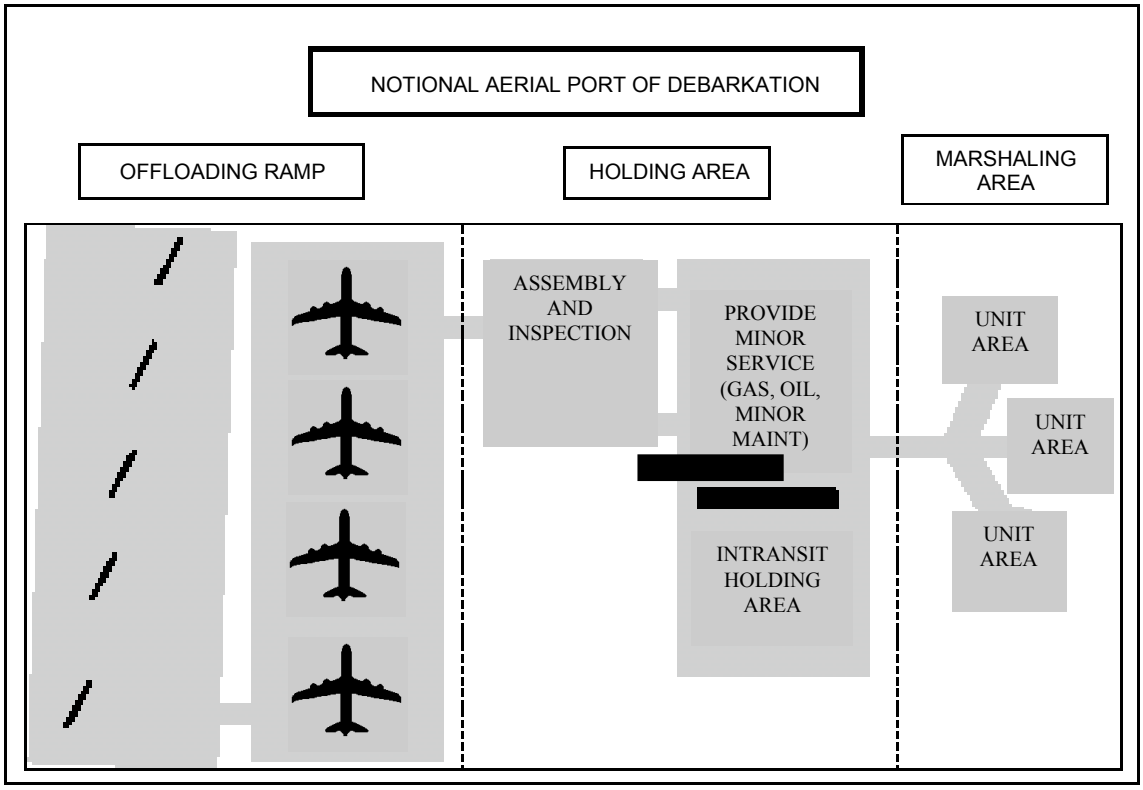



**Figure I-11. Notional Aerial Port of Debarkation**

### Off-Load Ramp Area Activities

The off-load ramp area activities are controlled by the TALCE. Each load will be released to the AACG for return to unit control at the holding area. The chalk leader or troop commander will perform the following:

- Provide assistance to the loadmaster.
- Comply with instructions from the off-load team chief when unlashing and off-loading from the aircraft.
- Ensure that all aircraft tie-down equipment is returned to the TALCE.
- Retain all shoring and dunnage for redeployment.
- Provide one copy of the passenger and cargo manifests to the arrival airfield control group (AACG).

The AACG will perform the following:

- Maintain coordination with the deploying unit and TALCE representative.
- Provide off-load teams and support equipment as required.
- Accept each planeload from the TALCE at the established release point.
- Remove shoring and dunnage from the aircraft and transfer it to the unit.

The TALCE will perform the following:

- Advise the AACG of the airflow and expected arrival of aircraft.
- Plan and supervise aircraft parking.
- Receive passenger and cargo manifests from the aircraft loadmaster.
- Supervise off-loading the aircraft, including removal of shoring and dunnage.
- Provide all MHE and special off-loading equipment including operators, as required, in accordance with AR 59-105/AFR 76-7 and agreements established during joint planning conferences.
- Provide ITV by reporting arrival of loads and release to the AACG.

**Holding Area Activities**

The deploying units are responsible for providing unit liaison personnel to AACG and for assisting the AACG as required. The AACG will perform the following:

- Coordinate with the TALCE and the deploying unit.
- Provide support to arriving units as determined during the joint planning conference.
- Maintain in-transit visibility of arriving loads.
- Release aircraft load to the deploying unit commander or his representative at a predesignated location.
- Coordinate MHE and transport of the movement of aircraft pallets to the unit marshaling area for pallet breakdown.
- Provide fuel, oil, and minor maintenance for transported vehicles.
- Provide emergency services to accomplish the mission.

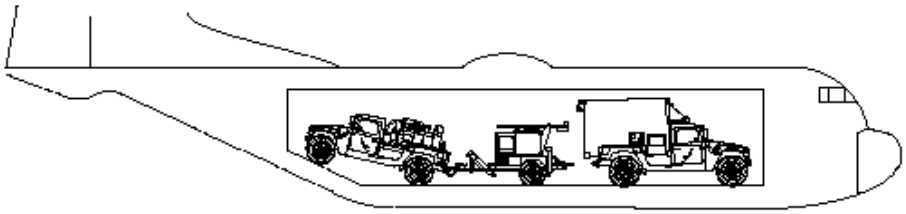
### Unit Marshaling Area

The deploying unit terminates the air movement at its marshaling area. Equipment is reconfigured for onward movement. Units will perform the following:

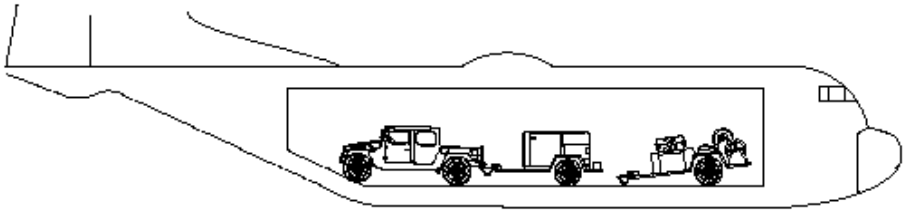
- Install equipment previously removed for transport.
- Ensure that all aircraft pallets and nets are returned to the TALCE or AACG.
- Perform required maintenance checks, including refueling.
- Prepare and organize for movement (convoy, rail, airlift, and inland water).

## Q-36 LOAD PROCEDURES FOR C-130 AIRCRAFT

The AN/TPQ-36(V)8 section can be loaded into two C-130 aircraft. The following procedure provides the tasks required to prepare and load the radar into the C-130. The OC shelter must be driven into the aircraft cab end first. The other vehicles and equipment are backed into the aircraft. All other procedures for loading the aircraft are in accordance with the aircraft general cargo loading manual and the aircraft loadmaster. Figure I-12 depicts section equipment loaded into the aircraft cargo hold. Notice that to load the aircraft in this configuration the PPG tows the ATG and the OC tows the ETG. This is opposite of the normal operational configuration.



AN/TPQ-36(V)8 C-130 AIR TRANSPORT – AIRCRAFT NO. 1



AN/TPQ-36(V)8 C-130 AIR TRANSPORT – AIRCRAFT NO. 2

**Figure I-12. C-130 Load Configuration**

## OC LOAD PREPARATIONS

The following procedures are used to prepare the OC for air loading. Refer to Figure I-13.

- Remove drain plug (1) from shelter floor.
- Loosen 10 captive screws (2) and lower pressure relief vent (3).
- Remove shelter antennas and store inside the shelter. Lower the three antenna Brackets (4). Confirm that the hinges are down.
- Prepare the shelter for movement by stowing and securing all lose equipment and supplies inside the shelter.
- Check to see if the HMMWV contains less than 3/4 tank of fuel. If not, drain tank to less than 3/4 full.

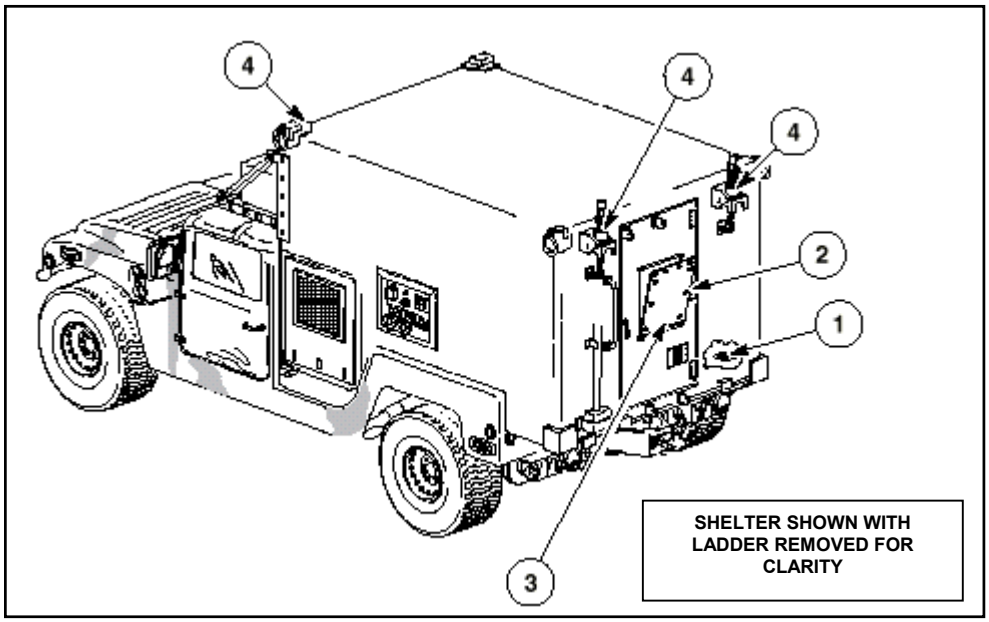



**Figure I-13. OC Shelter**

## ATG LOAD PREPARATIONS

The following procedures are used to prepare the ATG for movement. These procedures are the same as those required for towing by a HMMWV.

- Secure all ATG trailer equipment.
- Stow the antenna.
- Stow the primary power cable. The cable is rewound onto the curbside reel of the PPG.
- Lower the ATG trailer.
- Stow the ATG trailer and ground strap. The ground strap is wound around the retaining clip on the roadside of the ATG trailer. The rod is stowed in the retaining brackets on the back of the ATG trailer.

- Install the antenna weather cover and secure with four tiedown straps.
- Couple the ATG trailer to the PPG HMMWV.

## Q-37 LOAD PROCEDURES FOR C-130 AIRCRAFT

The AN/TPQ-37(V)8 radar section can be loaded into five C-130 aircraft. Prior to loading the radar, the antenna must be removed from the M1048 trailer and the generator pallet must be removed from the MTV/M925 5-ton truck. The overall preparations for loading the Q-37(V)8 are the same as for the Q-36(V)8. The required equipment is assembled, vehicles cleaned, fuel load adjusted to 3/4 tank or less and loose equipment and secondary loads secured. The aircraft loads are organized as follow:

- Chalk 1: The generator pallet prime mover (MTV/M925) is backed into the aircraft and tied down by AF personnel. This chalk is loaded after chalks 2 and 3, but should arrive at the APOD first to off load the generator pallet. There are no special requirements for the M925; use procedures for chalk 4 when loading the MTV.
- Chalk 2: ATG and Trailer. This load requires the C-130 ramp to be positioned horizontally, at a level even with the top of the trailer. This requires shoring under the ramp support, a solid or built up wooden block, commonly called a “milk crate” (Figure I-15). The amount of shoring will depend on how level the ground is. Locally manufactured bridge plates (see Figure I-16) are used to span the gap between the trailer and the aircraft’s ramp. Additional shoring is required under the ATG and trailer leveling jacks. The onboard winch is used to pull the ATG onto the C-130, guided by personnel using the T-handled lead bars (see Figure I-17). The winch on the trailer acts as a break for the load. Once the ATG is in position, the ramp is lowered, and the trailer is backed onto the aircraft and the loads secured. Figure I-14 provides a detailed checklist of preparations and procedures.

**ATG/TRAILER (Chalk 2)**

EQUIPMENT REQUIRED:
__ 2 ea. 2"x 12" x 12'-0" (shoring for ATG)
__ 2 ea. 3/4" x 24" x 24" (shoring for trailer jack pads {front})
__ 2 ea. bridge plates
__ 1 ea. NATO slave cables
__ 1 ea. Winch, complete with hooks and control unit
__ 2 ea. lead bar (T-handle)
__ 2 ea. chain (to connect winch cables to ATG)
__ Shoring for "milk crate" under aircraft ramp 20-24" high, 24" square, adjustable.

PREPARATION:
__ ATG wheels are set to 100 psi.
__ ATG wheels are set in position (rear of trailer turned in, backward, and free, front of trailer turned out and locked).
__ Chains are attached across front and rear of antenna to hook up to the winch.
__ All tie-downs and clamps are removed from ATG Trailer.
__ Connected slave cables to winch.
__ Winch control box hooked up.
__ Trailer winch connected to front chain
__ Shoring used under AF "milk crate."

LOADING:
Chalk 2 (Must be loaded first)
__ Trailer backed to aircraft, within 5-6" of ramp.
__ Bridge plates placed between ATG trailer and aircraft ramp.
__ Lead bars attached to loading wheels.
__ Aircraft winch attached to rear chain.
__ ATG jacked up by wheels 5-6" higher.
__ Aircraft winch pulls ATG in, trailer winch brakes ATG.
**NOTE: Lead bars are used to turn wheels only when ATG is moving. If ATG starts to run away lead bar personnel drop lead bars, which will brake the ATG**
__ 2" x 12" x 12' shoring placed under ATG.
__ ATG jacked down on shoring
__ ATG loading wheels are turned and locked for removal: front (trailer-tongue) turned in/locked, rear (trailer-rear) turned out and locked
__ Lead bars are stowed, ramp "milk crate" shoring stowed.
__ Trailer winch disconnected and reeled in
__ Stow slave cable, winch control.
__ Trailer pulled ahead 5-10'
__ Aircraft ramp lowered.
__ Trailer backed into aircraft.
__ 3/4" x 24" sq. shoring put down under front jack pads.
__ Trailer disconnected from truck using front trailer jacks only.
__ ATG/Trailer tied down by AF personnel.

**Figure I-14. ATG and Trailer Loading Checklist**

## ADDITIONAL SHORING FOR ANTENNA GROUP (ATG) USING AIR FORCE MILK

**DIMENSIONS**

ADDITIONAL SHORING IS 6 ” BY24” BY 24” WITH ENOUGH MADE TO BE ADJUSTABLE TO 12” TO 18” HIGH

**DIAGRAM**

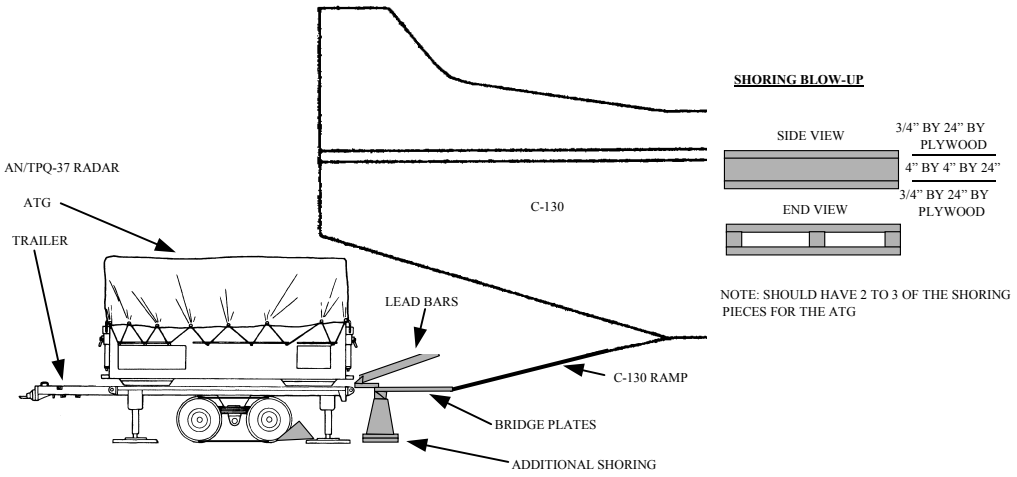



**Figure I-15. Ramp Support and Shoring**

## DIAGRAM FOR MAKING BRIDGE PLATES

MATERIAL IS 1/4 IN STEEL PLATE AND RUBBER HOSING FOR CUSHION

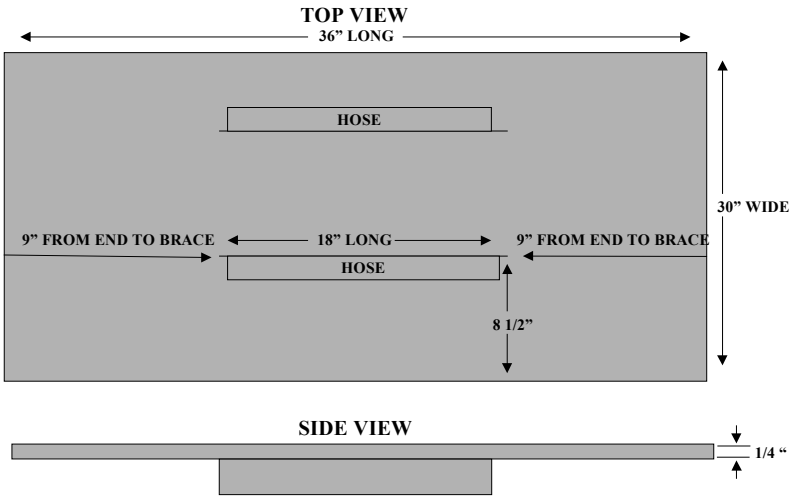



**Figure I-16. Bridge Plates**

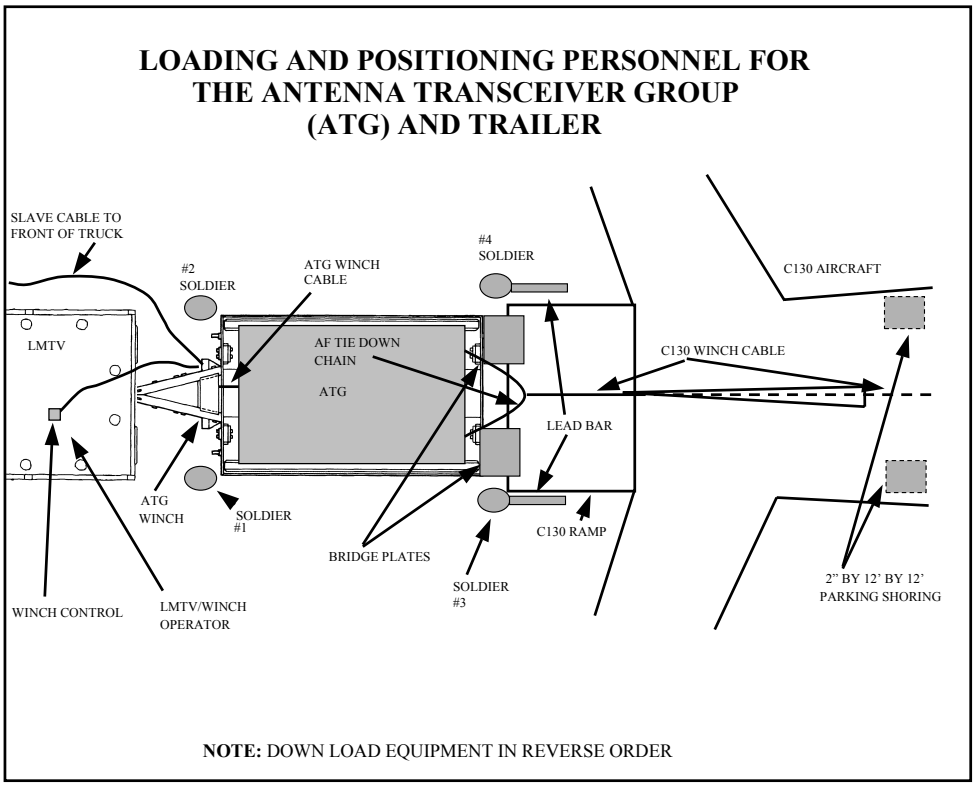



**Figure I-17. ATG and Trailer Loading**

- Chalk 3: PDG (Generator) and HMMWV w/S250 Shelter. This chalk is loaded similarly to chalk 2. The load also requires shoring to support the ramp, at a level even with the back of the MTV/M925 truck (see Figure I-19), unless a K-loader is used. When using the truck, the different heights of the C-130 and the truck bed create a steep incline with the ramp. Personnel must use extreme care that the load does not get out of control. When using the MTV, kneeling the rear tires will reduce the height difference. Once the PDG is loaded, and the truck or K-loader is pulled away from the aircraft, the shelter truck is backed into the aircraft, and both loads are secured. Figure I-18 contains a detailed checklist for this load.

**PDG GENERATOR AND HMMWV WITH S-250 SHELTER (Chalk 3)**

EQUIPMENT NEEDED:
__ 1 ea. NATO slave cables
__ 1 ea. Winch, complete with hooks and control unit
__ 2 ea lead bars (T-handle)
__ 2 ea bridge plates
__ Shoring for AF "milk crate" 20" - 24" high, 24" square
__ 2 ea. 2"x 12" x 12'-0" (shoring for ATG)

PREPARATION (Prior to backing generator truck to aircraft).
__ Loading wheels are set to 100 psi.
__ Tailgate is lowered.
__ Slave cable connected to winch.
__ Generator winch is connected to skid.
__ Loading wheels positioned [front (truck front) turned out locked, rear (truck rear) turned in, free]

LOADING:
Chalk 4
__ M925 backed to aircraft.
__ Shoring used under ramp "milk crate".
__ M925 backed to with 5-6" of aircraft ramp.
__ Bridge plates set.
__ Aircraft winch connected to skid
__ Lead bars attached to wheels.
__ Skid jacked up 5-6" higher.
__ Aircraft winch pulls skid into aircraft, truck winch acts as brake.
**NOTE: Lead bars are used to turn wheels only when ATG is moving. If ATG starts to run away lead bar personnel drop lead bars which will brake ATG**
__ 2" x 12" x 12' shoring placed under skid.
__ Skid jacked down onto shoring.
__ Loading wheels turned for removal and locked (front [truck front] - turned in, locked rear [truck rear] turned out, locked.
__ Lead bars are stowed, "milk crate" shoring stowed.
__ Stow slave cable, winch control.
__ Tailgate raised.
__ M925 driven to next aircraft.
__ Shelter backed into aircraft with generator
__ The equipment is tied down by AF personnel.
**NOTE: LOADING WHEELS ARE LOCKED ON AIRCRAFT-UNLOCK THE LEADING WHEELS WHEN GETTING READY TO WINCH OUT OF AIRCRAFT.**

**Figure I-18. PDG Generator and HMMWV with S250 Shelter Loading Checklist**

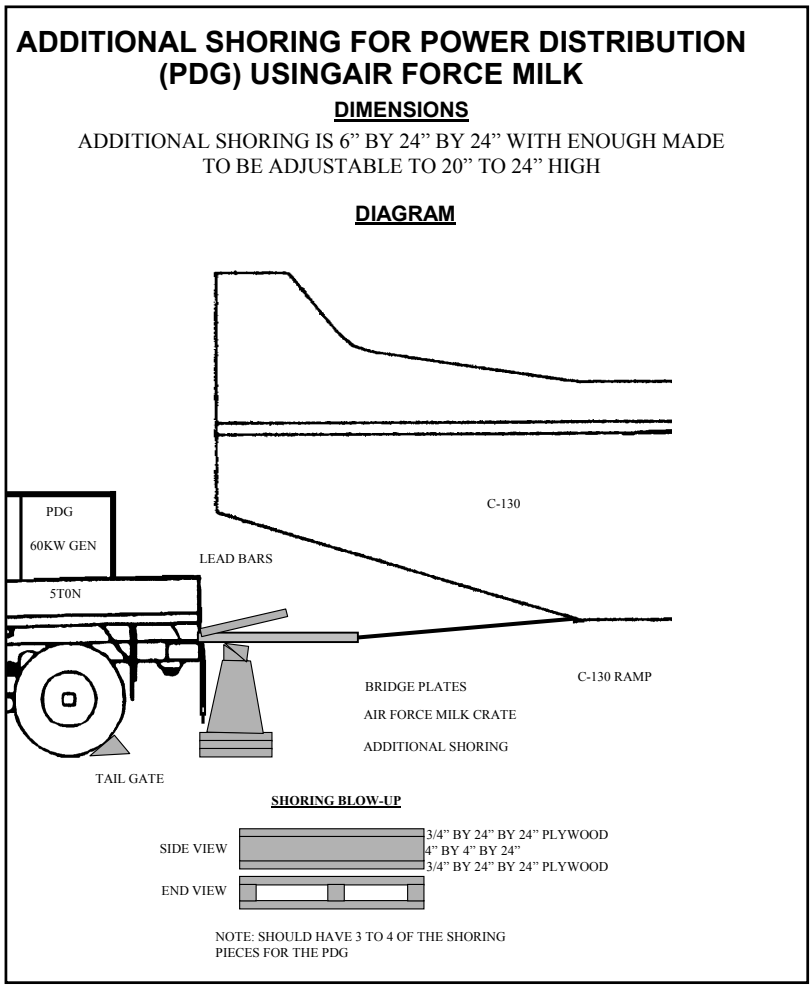



**Figure I-19. Shoring for PDG Generator**

- Chalk 4: MTV. Section personnel "kneel" the MTV by letting the air out of the tires, reducing the height to clear the top of the C-130 door. The MTV is then backed onto the aircraft and tied down. This chalk is loaded after chalk 3, but should arrive at the APOD second to facilitate down loading of the ATG and trailer (Figure I-20).

**MTV (Chalk 4)**

__ MTV driven to the aircraft, positioned to back in.
__ MTV is "kneeled."
__ MTV backed into aircraft.
__ MTV tied down by AF personnel.

**Figure I-20. MTV Loading Checklist**

- Chalk 5: RECON (M998)/ PU 806, 60 KW GENERATOR TRAILER. The generator is pushed into the aircraft using the pintle mounted to the front bumper of the vehicle. The push vehicle is backed out of the aircraft, and then the RECON vehicle is backed into the aircraft. Crew ties equipment down. Figure I-21 contains a checklist for this load.

**RECON VEHICLE / GENERATOR TRAILER (Chalk 5)**

EQUIPMENT REQUIRED:
__ Blocking to drive HMMVW on to disconnect/ connect generator trailer.
__ 1 each 3/4" x 24" sq. shoring for trailer jack when disconnect/connect in aircraft.

LOADING:
__ C-130 ramp is lowered to the ground.
__ Generator is pushed on aircraft w/front bumper hitch.
__ The truck front wheels are driven up on the blocks.
__ The 3/4 shoring is placed under the trailer landing leg.
__ The trailer is jacked off the truck.
__ The truck is backed out of the aircraft, turned around, and backed into the aircraft and backed up on the blocks.
__ The trailer is connected back to the truck, the truck is driven off of the blocks, the blocks and shoring is stowed.
__ Aircrew ties equipment down.

**Figure I-21. RECON Vehicle and Generator Trailer Loading Checklist**